3.10 PUBLIC UTILITIES

This section describes the existing public utilities within the five project regions and identifies the potential for impacts on utility systems for the No Project, Modal, and High-Speed Train (HST) Alternatives. The public utilities evaluated in this section include electrical transmission lines, natural gas facilities, and wastewater treatment facilities. A *potential utility impact* is any potential conflict between an alignment, station, or airport facility, and a utility, including crossings regardless of depth or height.

3.10.1 Regulatory Requirements and Methods of Evaluation

A. REGULATORY REQUIREMENTS

California Public Utilities Commission

The California Public Utilities Commission (CPUC) primarily regulates the provision of privately owned utilities in California. These utilities include privately owned telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation companies. The CPUC is responsible for assuring that California utility customers have safe, reliable utility services at reasonable rates; protecting utility customers from fraud; and promoting the health of California's economy. The CPUC does not issue permits for proposed projects that would cross utility lines. The CPUC does, however, regulate at-grade rail crossings.

Office of the State Fire Marshall

The Office of the State Fire Marshall, Pipeline Safety Division, regulates the safety of approximately 5,500 mi (8,851 km) of intrastate hazardous liquid (e.g., oil, gas) transportation pipelines and acts as an agent of the Federal Office of Pipeline Safety concerning the inspection of more than 2,000 mi (3,219 km) of interstate pipelines. Pipeline safety staff inspects, tests, and investigates to ensure compliance with all federal and state pipeline safety laws and regulations. All spills, ruptures, fires, or similar incidents are responded to immediately; all such accidents are investigated for cause.

Research and Special Programs Administration, U.S. Department of Transportation

The Research and Special Programs Administration, U.S. Department of Transportation, is responsible for carrying out the duties regarding pipeline safety set forth in 49 U.S.C. § 60101 *et seq.* and 49 C.F.R. § 190.1. The regulations apply to the owners and operators of the facilities and cover the design, installation, inspection, emergency plans and procedures, testing, construction, extension, operation, replacement, and maintenance of pipeline facilities transporting oil, gas, and hazardous liquid. The regulations require operators of gas pipelines to participate in a public safety program, such as a one-call system that would notify the operator of any proposed demolition, excavation, tunneling, or construction that would take place near or affect the facility.

Wastewater Regulatory Setting

Many regulatory agencies are involved in wastewater treatment oversight. These agencies include the U.S. Environmental Protection Agency, the California Water Resources Control Board, and nine California Regional Water Quality Control Boards (RWQCBs). Primary wastewater regulation occurs via the issuance of wastewater discharge standards that are implemented through National Pollutant Discharge Elimination System permits and waste discharge requirements issued by the various RWQCBs.

Wastewater conveyance and treatment facilities in the study area are owned and/or operated by different agencies and entities. Any potential conflict with such facilities would be addressed in consultation with the respective agency. If a proposed alternative would potentially include use

of wastewater facility properties, during the project-level review the need for easements, agreements, or other arrangements with the agency and/or local jurisdiction would be considered and addressed.

B. METHOD OF EVALUATION OF IMPACTS

Various methods, including the following, were used to gather the appropriate information for each of the regions.

- Review of the project geographic information systems (GIS) to identify cities and counties in the study area.
- Review of the general plans for potentially affected communities within each of the five regions in which proposed alternatives are being studied, as well as maps from the Thomas Bros. *California Atlas* and from the California State Automobile Association.
- Review of project alignments/proposed improvements against GIS information of electrical transmission lines, and gas and oil pipelines compiled by MapSearch.
- Exploration of Web sites of the GIS-identified cities and counties in the study area to gather appropriate setting information.
- Examination of applicable utility system maps and Web sites to gain a better understanding of facility distribution.
- Contact with public utility providers via mail to obtain or confirm the locations of their current and planned services and facilities in the study area.

Public utilities can generally include a range of services such as water, power, sewage, communications, and other systems. For the purposes of this analysis, three of the most common major facilities that may pose construction challenges were identified to best represent potential utility impacts. These facilities not only provide critical services, they are likely to create a hazard if damaged during construction operations.

- Electrical facilities are defined as major transmission lines and substations that meet or exceed a power rating of 230 kilovolts (kV).
- Natural gas facilities are defined as high-pressure gas pipelines and facilities of various sizes.
- Wastewater treatment facilities are defined as wastewater pipelines with a minimum 36-in (91-centimeter [cm]) diameter, and any treatment facilities located in the project corridor.

The methodology used to assess potential conflicts (any crossing or longitudinal encroachment of an existing utility by the defined improvement) included overlaying the available utility maps with the alternative alignments and identifying facilities within 100 ft (30 m) of the centerline and the proposed alignment alternatives. Because public utilities are so prevalent throughout the study area, it was not practical to assess each potential conflict. Rather, the relative impact between alternatives was determined by quantifying the number and type of potential conflicts for each alternative. In addition, a qualitative ranking of high, medium, or low was assigned to describe the potential severity of the conflict, as described below and summarized in Table 3.10-1.

Electric transmission lines, telecommunications lines, natural gas pipelines, and wastewater pipelines would be less likely to be affected by an alternative because with relatively minimal disruption or construction impacts, they could be avoided, minimized, or mitigated by routing either the public utility or the transportation improvement around, over, or under the facility. Where unavoidable,

relocations of the utilities would not pose adverse environmental risks, based on current construction practices. However, they do represent additional project-related costs.

- Fixed facilities, such as electrical substations or power stations and wastewater treatment plants, would be more likely to be affected by an alternative, because they could require more considerable engineering, design, and construction to avoid, minimize, or mitigate potential conflicts. These types of fixed facilities have more significant constraints regarding any potential conflict, such as routing the transportation improvement around, over, or under the facility, or relocating the fixed facility to another location.

Table 3.10-1
Rankings for Potential Public Utilities Impacts/Conflicts

	Electrical Facilities	Natural Gas Lines	Waste Treatment Facilities
Low	No 230-kV or greater facility within study area	1 to 15 gas lines within study area	No wastewater pipelines of 36-in (91-cm) diameter or greater or treatment facilities within study area.
Medium	N/A*	16 to 30 gas lines within study area	N/A*
High	One or more 230-kV substation, power station, or greater facility within study area	31 or more gas lines within study area	Wastewater pipelines of 36-in (91-cm) diameter or greater or treatment facilities within study area.

* N/A = not available. There is no medium rating for this category; impacts are either low (no facilities in the segment) or high (one facility or more in the segment).

The analysis indicated that with regard to potential conflicts with utilities, there was little difference among the proposed alternatives. This is because utilities generally do not present significant potential impacts that cannot be avoided, minimized, or mitigated through conventional design and construction processes. For instance, most potential conflicts typically would be identified during the design or construction stage of a project, and standard measures would be taken to minimize costs and disruption of service.

3.10.2 Affected Environment

A. STUDY AREA DEFINED

The study area for public utilities encompasses the area within 100 ft (30 m) of the centerline of each alignment, and 100 ft (30 m) around stations and airports. The study area is generally located within developed and urbanized areas throughout the five study regions. These areas typically include various underground, at-grade, and elevated utilities that provide water, power, communications, and sewage service to residential, business and manufacturing, and agricultural practices. The following section provides additional information on utility resources.

B. GENERAL DISCUSSION OF PUBLIC UTILITIES

As shown in Figure 3.10-1, a representative segment of the proposed HST Alternative in the Los Angeles to San Diego via Inland Empire region illustrates the difficulty in avoiding conflicts with utilities that are present in virtually every segment in the study area. This condition is common across all regions and alignment and design options under consideration.

C. PUBLIC UTILITIES BY REGION

The key service providers and resources in each of the five regions are summarized below. A complete description of these providers and resources is provided in Appendix 3.10-A.

Bay Area to Merced

This region includes central California from the San Francisco Bay Area (San Francisco and Oakland) south to the Santa Clara Valley and east across the Diablo Range to the Central Valley.

- Electrical Facilities—Providers include the Pacific Gas and Electric Company (PG&E), Silicon Valley Power, and City of Palo Alto Utilities (CPAU). There are two power-generating facilities within the region (Santa Clara power plant and Gilroy Cogeneration Plant LP).
- Natural Gas Facilities—Provided by PG&E with the exception of the City of Palo Alto. In the City of Palo Alto, CPAU gas is purchased from commodity suppliers and transported via PG&E's system to CPAU's distribution system.
- Wastewater Treatment and Water—Provided by more than 50 cities and other special districts within the region.

Sacramento to Bakersfield

This region of central California includes a large portion of the Central Valley (San Joaquin Valley) from Sacramento south to Bakersfield.

- Electrical Facilities—Provided by PG&E, Sacramento Municipal Utility District (SMUD), and Southern California Edison.
- Natural Gas Facilities—Provided by PG&E.
- Wastewater Treatment—There are three wastewater treatment facilities: Atwater Wastewater Treatment Plant (adjacent to SR-99), Ceres Water Reclamation Facility, and Cross Valley Canal Treatment Plant. Wastewater service is generally provided by each city or other special district within the region.

Bakersfield to Los Angeles

This region of southern California encompasses the southern portion of the Central Valley south of Bakersfield, the mountainous areas between the Central Valley and the Los Angeles basin, and the northern portion of the Los Angeles basin from Sylmar to downtown Los Angeles.

- Electrical Facilities—Providers include Los Angeles Department of Water and Power (LADWP), City of Burbank, Southern California Edison (SCE), and PG&E. The MacNeil Substation and a 42-megawatt (MW) natural gas/fuel-to-oil electricity power plant are located in the Burbank area.
- Natural Gas Facilities—Providers include Southern California Gas (SCG) and PG&E. Natural gas facilities are provided by pipeline by PG&E.
- Wastewater Treatment—The region is predominantly served by Los Angeles County Sanitation District, Los Angeles City, Rosemund Community Services District, City of Tehachapi Public Works, Mojave Public Utilities Districts, and City of Bakersfield Wastewater Division. Areas not served by these providers are generally served by septic tanks or wastewater plants well beyond proposed alignments.

Los Angeles to San Diego via Inland Empire

This region of southern California includes the eastern portion of the Los Angeles basin from downtown Los Angeles east to the Riverside and San Bernardino areas and south to San Diego generally along the I-215 and I-15 corridors.

- Electrical Facilities—Providers include LADWP, SCE, and San Diego Gas and Electric Company (SDG&E).
- Natural Gas Facilities—Provided by Sempra Energy Company through its subsidiaries of SCG and SDG&E.
- Wastewater Treatment and Water—Provided by more than 13 cities and special districts.

Los Angeles to San Diego via Orange County

This region includes the western portion of the Los Angeles basin between downtown Los Angeles and Los Angeles International Airport and the coastal areas of southern California between Los Angeles and San Diego, generally following the existing Los Angeles to San Diego via Orange County (LOSSAN) rail corridor.

- Electrical Facilities—Providers include LADWP, SCE, and Sempra Energy Company/SDG&E.
- Natural Gas Facilities—Provided by SCG and three wholesale utility customers, including SDG&E, Southwest Gas Corporation, and City of Long Beach Energy Department.
- Wastewater Treatment—Provided primarily by San Diego Metropolitan Wastewater District, Encina Wastewater Authority, San Elijo Joint Powers Authority, U.S. Marine Corps, and South Orange Wastewater Authority.

3.10.3 Environmental Consequences

A. EXISTING CONDITIONS COMPARED TO NO PROJECT ALTERNATIVE

The existing conditions assume the continued operation of the transportation and public utilities infrastructure described above. The No Project Alternative assumes that, in addition to existing conditions, additional transportation and utility improvements will be developed and operational by 2020. The transportation improvements include projects that are programmed or funded to 2020 (as described in Chapter 2).

It was not possible as part of this study to identify or quantify the utility improvements expected to occur by 2020. Rather, it is assumed that utility development will occur to meet projected demand and growth characteristics near the alignments of the proposed alternatives. For existing transportation facilities, conflicts with electrical transmission lines, natural gas pipelines, oil pipelines, wastewater and water utilities, and other utilities have previously been addressed and few additional or increased impacts are expected from the future transportation improvement included in the No Project Alternative. In addition, it is assumed that measures would be taken to avoid these potential conflicts to the extent feasible and practical, as well as to greatly limit any potential additional costs or disruption of service. It is common practice to coordinate onsite with utility representatives during construction in the vicinity of critical infrastructure such as high-voltage overhead/underground transmission lines, high-pressure gas pipelines, or aqueduct canals. Also, future transportation or utility improvements would be expected to be analyzed in a project-level environmental document, which would incorporate feasible measures to mitigate potentially significant adverse environmental impacts.

Based on the above assumptions, the existing conditions of the No Project Alternative are used to provide the baseline for analysis of potential conflicts with utilities.

B. NO PROJECT ALTERNATIVE COMPARED TO MODAL AND HIGH-SPEED TRAIN ALTERNATIVES

Existing conditions from the No Project Alternative provide the baseline condition. Improvements associated with the proposed Modal and HST Alternatives would result in potential impacts in addition to those resulting from the No Project Alternative. With respect to public utilities, the analysis did not

show significant differences when comparing the No Project Alternative to the Modal and HST Alternatives, or comparing the Modal and HST Alternatives. As described above, the number of potential utility conflicts under the No Project Alternative was not identified, and existing conditions were used as the baseline for analysis. For the purposes of this analysis, the existing conditions are treated as representative of the No Project Alternative, and the analysis summarizes the relative differences between the existing conditions and Modal and HST Alternatives. Because there are several alignment and station options for the HST Alternative, a range of potential utility conflicts was developed that represents the design options with the least to the greatest number of potential conflicts within a region, as summarized below and in Table 3.10-2.

The most significant difference between the alternatives is the lower number of potential high-impact conflicts (conflicts with fixed facilities such as electrical substations, power plants, and wastewater treatment facilities) under the Modal Alternative. For instance, the HST Alternative would result in up to 20 potential fixed-facility conflicts, compared to 10 under the Modal Alternative. This significant difference is because the Modal Alternative generally is an expansion of an existing facility (i.e., highway widening or airport expansion) where high-impact facilities are not likely to be located. In contrast, greater portions of the HST Alternative would be located in undeveloped corridors where high-impact facilities are more likely to be located; however, the undeveloped corridors offer greater potential for avoidance through alignment changes. Another significant finding is the relatively high number of total potential conflicts for both the Modal (up to 384) and HST (as many as 323) Alternatives in the Sacramento to Bakersfield region compared to other regions. This is a result of two major factors.

- The region includes the longest Modal and HST alignments compared to the other regions.
- The Modal and HST alignments pass through developed urban and agricultural areas where there are heavy concentrations of utilities, compared to other more remote regions, such as mountain crossings, where utilities are limited.

Table 3.10-2
Summary of Potential Public Utilities Conflicts for Alternatives[a]

Region	Electrical Transmission Lines	Electrical Sub- or Power Stations	Natural Gas Pipelines	Wastewater Treatment Pipelines[b]	Wastewater Treatment Plants	Regional Totals
Modal Alternative						
Bay Area to Merced	8	3	80	N/A	0	91
Sacramento to Bakersfield	252	3	128	N/A	1	384
Bakersfield to Los Angeles	57	2	128	2	0	189
Los Angeles to San Diego via Inland Empire	33	1	70	21	0	125
Los Angeles to San Diego via Orange County (HST corridor equivalent)	14	0	30	0	0	44
Los Angeles to San Diego via Orange County (conventional rail corridor equivalent)	26	0	45	4	0	75
Modal System-wide Totals[c]	**364**	**9**	**436**	**23**	**1**	**833**

High-Speed Train Alternative[c]						
Bay Area to Merced	3–4	1–2	51–67	N/A	0–0	55–73
Sacramento to Bakersfield	105–227	1–5	45–89	N/A	0–2	151–323
Bakersfield to Los Angeles	22–47	1–1	57–138	0–3	0–1	80–190
Los Angeles to San Diego via Inland Empire	29–29	2–9	61–64	37–51	0–0	129–153
Los Angeles to San Diego via Orange County (HST corridor)	22–25	1–1	73–77	0–0	0–0	96–103
Los Angeles to San Diego via Orange County (conventional rail corridor)	22	1	46	7	0	76
HST System-wide Totals	**181–332**	**6–18**	**287–435**	**37–54**	**0–3**	**511–842**

[a] It is not possible to quantify the utility impacts associated with the No Project Alternative. The existing conditions are assumed to be representative of the future No Project Alternative.

[b] For Bay Area to Merced and Sacramento to Bakersfield regions, the total number of potential wastewater pipeline conflicts was not provided.

[c] The number of potential conflicts associated with the HST Alternative is provided as a range of potential conflicts. For each region, the HST Alternative generally includes various design options within each segment of the region. These routes serve only to provide a reasonable range of impacts for comparative purposes and do not represent any selection of a preferred option.

3.10.4 Comparison of Alternatives by Region

The key findings of the utilities analysis by region and alignment options are summarized below. For a complete summary of all utility conflicts by region see Table 3.10-B-1 in Appendix 3.10-B.

A. BAY AREA TO MERCED

Modal Alternative

Within the five segments of the region there would be a total of 11 potential conflicts with electrical utility facilities, of which three are fixed facilities. The Merced to San Jose segment includes two electrical power facilities within the study area: PG&E's Evergreen Substation and Calpine's Gilroy power plant. In addition, the study area for the San Jose to San Francisco segment includes PG&E's San Jose B Substation. There are potential conflicts with natural gas pipelines for a total of 80 potential conflicts in all segments; the San Jose to Oakland segment would have the highest number of potential conflicts (22). No potential conflicts with wastewater treatment plants were identified. There is a potential for conflicts with wastewater pipelines, although no quantifiable data about the total number of potential conflicts were available.

High-Speed Train Alternative

Within the San Jose to Oakland segment, there are two potential high-impact conflicts: the PG&E San Jose B Substation and Santa Clara Power Plant. The San Jose B Substation would potentially conflict with the I-880 alignment option, while the Santa Clara Power Plant would potentially conflict with the Mulford alignment option. The largest number of potential conflicts associated with the HST Alternative would be with natural gas pipelines. There are no potential conflicts with wastewater treatment plants.

High-Speed Train Alignment Option Comparison

The two alignment options for the segment between Oakland and San Jose each would potentially impact an electrical substation and have a similar number of conflicts with natural pipelines, 20 for the Hayward Alignment/I-880 option and 18 for the Hayward/Niles/Mulford option. No other alignment options within the region would result in potential impacts on a fixed facility. From San Jose to Merced, the Pacheco Pass options would each result in more natural gas pipeline conflicts (23) than the three Diablo Range direct tunnel options (9). Each alignment option would potentially conflict with three electrical transmission lines. Along the existing Caltrain corridor between San Francisco and San Jose, the only potential for conflict would be with the 24 natural gas pipelines within the study area.

B. SACRAMENTO TO BAKERSFIELD

Modal Alternative

Of the 384 total potential conflicts, 255 (66%) are electrical facilities, three of which are high-impact substations. The proposed widening of SR-99 would potentially conflict with two electrical substations in the Sacramento to Stockton segment and one in the Modesto to Merced segment. There are a total of 128 potential conflicts with natural gas pipelines. There is the potential for impacts on the Atwater Wastewater Treatment Plant, which lies adjacent to SR-99 in the Modesto to Merced segment and could be affected by the widening of the highway. There is a potential for conflicts with wastewater pipelines, although data about the total number of potential conflicts have not been gathered.

High-Speed Train Alternative

Within three of the six segments, there is a potential for conflict with either an electrical substation or power station, or a wastewater treatment plant. All the alignment options within the Sacramento to Stockton segment would potentially conflict with electrical substations. Within the Modesto to Merced segment, only one Union Pacific Railroad (UPRR) alignment option would potentially conflict with the Ceres Water Reclamation Facility. All but two alignment options in the Tulare to Bakersfield segment would potentially conflict with either an electrical substation or the Cross Valley Canal Wastewater Treatment Plant.

High-Speed Train Alignment Option Comparison

Within the Sacramento to Stockton segment, the number of potential impacts on fixed facilities is equal for the UPRR and Central California Traction (CCT) alignment options. Depending on the option, the potential fixed-facility conflicts associated with the UPRR and CCT alignment options ranges from one to three. The difference between the alignment options is the addition of another potential electrical substation conflict associated with the UPRR option maintenance facility.

There are no impacts with fixed facilities within the Stockton to Modesto segment. In this segment the UPRR alignment option has more total potential conflicts with electrical transmission lines and natural gas pipelines than the Burlington Northern Santa Fe (BNSF) alignment option.

From Modesto to Merced, one of the connectors to the UPRR alignment option would potentially conflict with a wastewater treatment plant, but the BNSF alignment option would have no major conflicts.

From Merced to Tulare there would be no impacts on fixed facilities for any of the UPRR or BNSF alignment options, and total potential conflicts would be similar for all alignment options.

In the Tulare to Bakersfield segment, each UPRR alignment option would potentially impact an electrical substation, and the majority would also potentially impact a wastewater treatment plant. The BNSF alignment option would not impact an electrical substation, but would potentially impact a wastewater treatment plant.

In general, the alignment option with the greatest number of potential high-impact conflicts and total utility conflicts follows the UPRR alignment. The difference between the alignment options with the greatest potential conflicts and the least potential conflicts is six fixed facilities, and 100 transmission line and natural gas pipeline conflicts. This represents a substantial difference and should be considered a primary discriminator between the alignment options.

C. BAKERSFIELD TO LOS ANGELES

Modal Alternative

There are 57 potential conflicts with electrical facilities within the study area. This includes potential conflicts in all project segments, with the exception of SR-58/14 from SR-99 to Palmdale (because there is no highway widening in that area). Within the I-5: Burbank to Los Angeles Union Station (LAUS) segment, there is the potential for conflict with the McNeil Substation and a 42-MW electrical power plant in the City of Burbank. Of the total 128 potential conflicts with natural gas pipelines, the I-5 between SR-14 and SR-99 segment has the greatest number (88). There are limited potential conflicts with wastewater facilities, with the exception of I-5: SR-99 to SR-14 segment where there are two potential conflicts with a major sewage pipeline.

High-Speed Train Alternative

In the Bakersfield to Los Angeles region, there is the potential for two high-impact conflicts. The SR-58 corridor alignment option in the Bakersfield to Sylmar segment would traverse a portion of the Lancaster Water Reclamation Plant, while the Burbank Metrolink/Media City in the Sylmar to downtown Burbank segment would potentially conflict with the McNeil Substation. All alignment options would potentially conflict with the McNeil Substation since it is part of the only option through the Sylmar to downtown Burbank segment.

High-Speed Train Alignment Option Comparison

From Bakersfield to Sylmar, only the SR-58 corridor alignment option would potentially impact a fixed facility, the Lancaster Water Reclamation Plant. Among the alignment options in the segment there is a wide range of total potential conflicts with utility infrastructure. The SR-58/Soledad Canyon corridor option would have the fewest overall utility conflicts, while the I-5 Tehachapi corridor option would have the most conflicts.

Within the Sylmar to downtown Burbank segment, the majority of potential conflicts are associated with the station options, including one potential impact on an electrical substation as part of the Burbank Metrolink/Media City. The Metrolink/UPRR alignment option has two potential conflicts with natural gas lines, while the Combined I-5/UPRR option has one potential conflict with natural gas lines.

There are no impacts on fixed facilities in the downtown Burbank to Los Angeles segment. There are no substantial differences in the total number of potential conflicts among the various alignment options.

D. LOS ANGELES TO SAN DIEGO VIA INLAND EMPIRE

Modal Alternative

Under the Modal Alternative, the segment with greatest number of potential impacts is the LAUS to March Air Reserve Base. This segment traverses the most developed area of the region and contains the most utility infrastructure. There are a total of 25 potential conflicts with electrical facilities within the segment, including one potential conflict with SCE's Vista Substation. There are 70 potential conflicts with natural gas lines, with equal distribution among all segments. There are 21 potential conflicts with wastewater treatment facilities, of which 18 are located in the Los Angeles to March ARB segment. Utility conflicts are not anticipated at either the Orange or San Diego airport.

High-Speed Train Alternative

Within each segment of the Los Angeles to San Diego via Inland Empire region there would be a potential conflict with an electrical substation or power plant. All alignment options in the Los Angeles to March ARB segment and March ARB to Mira Mesa segment would potentially conflict with one or more electrical power stations. In the Mira Mesa to San Diego segment, two of the three alignment options (both I-15 to the coast alignment options) would potentially conflict with a power station. There would be no potential conflicts with any wastewater treatment plants.

High-Speed Train Alignment Option Comparison

Each alignment option in the Los Angeles to San Diego via Inland Empire region, except the I-15 to Qualcomm Stadium option, would potentially impact fixed electrical facilities. The UPRR Riverside Line to San Bernardino option has the greatest potential for impacts, with seven conflicts with electrical substations. Both the UPRR Colton Line to San Bernardino and UPRR Riverside/UPRR Colton Line options would potentially impact four electrical substations.

The fourth alignment option in the Los Angeles to March ARB segment is the UPRR Colton Line, which would potentially impact one electrical substation. Additionally, each of the alignment options in this segment would result in similar numbers of conflicts with electrical transmission lines, natural gas pipelines, and wastewater pipelines.

Each alignment option in the March ARB to Mira Mesa segment would potentially impact one fixed electrical facility and have similar numbers of conflicts with other public utilities infrastructure.

From Mira Mesa to San Diego, each I-15 to the coast alignment option would potentially impact one fixed electrical facility, while the I-15 to Qualcomm Stadium would not impact any fixed facilities and have relatively few potential conflicts with other public utility infrastructure (four natural gas pipelines and one wastewater treatment pipeline).

E. LOS ANGELES TO SAN DIEGO VIA ORANGE COUNTY

Modal Alternative

There are 26 locations in which the corridor is crossed by 230-kV transmission lines. No electrical substations or power plants were identified within the 100-ft (30-m) study area of I-5. High-pressure natural gas pipelines cross the I-5 corridor in 45 locations. Water treatment facilities crossing the I-5 corridor include two treated wastewater ocean outfalls in the Camp Pendleton segment and two major sewer trunk lines, one in the I-5/805 to SR-52 segment and another in the SR-52 to Santa Fe Depot segment.

High-Speed Train Alternative

The HST Alternative in the LOSSAN region includes two separate sets of options and improvements. The first is the electrified rail options north of Irvine (described as high-speed rail or HSR), and the second is improvement options for the existing LOSSAN rail corridor between Los Angeles and San Diego (described as conventional rail). Each segment is examined separately below.

High-Speed Train Alignment Option Comparison

There would be no impacts on fixed facilities in the LAUS to LAX alignment option. The potential conflicts for this option include six electrical transmission lines and 41 natural gas pipelines. Each alignment option from LAUS to Irvine would potentially impact an electrical substation. The LOSSAN option would result in slightly more potential conflicts with other utility infrastructure (49 conflicts) than the UPRR Santa Ana Branch option (44 conflicts). There are no impacts on wastewater facilities within the HSR corridor.

Conventional Rail Corridor Alignment Option Comparison

Along the conventional rail corridor, there is the potential for one conflict with an electrical substation. Within the Fullerton to Irvine Station segment, either alignment option would potentially conflict with an electrical substation. Since the alignment options within each segment follow the same alignment, the total number of potential conflicts would be the same for each option. Therefore, from a public utility conflict standpoint, there is no difference between which alignment option is used in each segment.

3.10.5 Mitigation Strategies

Proposed general mitigation strategies for potential utility conflicts should first focus on avoidance of the potential conflicts. If such conflicts are unavoidable, the next strategy should focus on reducing and minimizing the potential impact. The mitigation strategies are similar for all regions and would be refined during subsequent project-specific review.

For large utilities, such as wastewater treatment facilities, electrical substations, and pipelines, the strategy would be first to avoid crossing or using any of the utility right-of-way or facility footprint as the project-specific review proceeds and as engineering designs are refined. Avoidance opportunities should include consideration of modifying both the horizontal and vertical profiles of the proposed transportation improvements.

If avoidance is not feasible, and adjustment of alignments has not removed potential conflict, then in close consultation and coordination with the utility owner, relocation/reconstruction/restoration of the utility should be considered as a second mitigation strategy. This type of mitigation could include combining several utilities into a single utility corridor, or relocation or reconstruction. Where feasible and cost-effective, consolidating several utilities, primarily underground electrical and communications utilities, into one conduit should be considered during utility relocation planning.

3.10.6 Subsequent Analysis

As previously mentioned, the public utilities impact analysis is programmatic and addresses only representative utilities; it does not address all utilities and does not address local details. Project-level analysis would address all utilities and local issues once the alignments are more defined. Project-level environmental documentation and subsequent planning documents should include more detailed information on the following utilities.

- Water supply lines.
- Wastewater conveyance lines.

- Wastewater and water pump stations.
- Storm drains.
- Fiber-optic lines.
- Telecommunication lines.
- Other utilities, and pipelines likely to be crossed or conflict with the various alternative alignments, including liquid petroleum, crude oil, etc.